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*From the Journal, Asiatic Society of Bengal, Vol. LXVIII.
Part II, No. 4, 1899.*

Akakia : an Ancient Eastern Medicine.—By DAVID HOOPER, F.C.S.

A substance called Akakia or Aqāqiyā is described in both old and modern works on Indian Materia Medica, and is occasionally found in the bazars of this country.

Dioscorides and Hippocrates are said to have described it as the juice of a prickly tree and lauded its properties. Dr. Dymock avers that this plant is mentioned by Theophrastus (iii. 4; iv. 3; vi. 1) under the name of *ακανθος*, and that Virgil (*Georg.* ii. 119) speaks of the same *acanthus* in the line “*baccas semper frondentis acanthi*,” no doubt in allusion to the globular inflorescence of the tree.

The botanical origin of the drug from the earliest records appears to be a bush or tree yielding an exudation similar to gum arabic. According to Arabian and Persian writers, the tree from which it is prepared is called “Karaz.” This is the fruit of *Acacia nilotica* of Delile

(*Fl. Ægypt.*, i. 963), the *Acacia vera* of Vesling (*Ægypt.*, p. 9, *Icon*), and is known as "Sant" among the Egyptians. These are all vernacular names and synonyms of one or more species, including *Acacia arabica*, the common *babūl* tree of this country.

This is not the first time a paper has been read before this Society on the subject of this remarkable medicine. In 1837 a communication was made by Mr. Lewis DaCosta, which consisted of a translation of the article on "Aqaqia" in the *Makhzan-al-Adwiyah* of Mahomed Khosru Khan. (See *Journal Asiatic Society of Bengal*, Vol. VI. part I, January to June, 1837, p. 392). No reference was made in the paper to the uses of the drug at that time, nor were any opinions offered as to the condition of the article as it was then sold or the estimation in which it was held by the people. Regarding the preparation of the extract, Pliny (24, 67) says that "the juice is left to thicken in the pods, which are steeped in rain water for the purpose, and then poured into a mortar, after which the juice is extracted by means of presses. It is then dried in the sun, and when dry, divided into tablets."

The method of preparing the extract, according to the *Makhzan*, is as follows:—The fresh, unripe fruits should be employed. These are bruised in a mortar, boiled in water over a gentle fire until the mixture assumes a thick consistence, then it is poured into moulds and set aside to dry, after which it is ready for use. Some authorities are careful in pointing out that the desiccation of the extract should be effected under the influence of the sun's rays, as a much superior preparation is supposed to be produced under these circumstances. The expressed juice, after a certain degree of concentration, is sometimes poured into bladders in which it is allowed to harden.

The little bladders full of *Akakia* found in Europe contain about five or six ounces each. That it was not unknown on the Continent in the early part of last century is evidenced by the fact that "Doctor *Akakia*" is the pseudonym under which Voltaire overwhelmed with ridicule Maupertuis a companion of Frederick the Great.

The drug reaches India *viâ* Bombay, and is imported into this city from the Red Sea ports and the Persian Gulf. It is sold in the bazars of Bengal and Bombay either in very thin black cakes about the size of a rupee, or in larger cakes two inches in diameter and half an inch in thickness. The wholesale price is two sērs for a rupee, and the commodity retails for about $1\frac{1}{2}$ anna per chittak.

Various observers have noticed a difference in the character of the drug as sold in this country. It is usually a solid, heavy, brittle, dark coloured substance without any odour; the taste is insipid or sweetish at first, then astringent; it breaks with a shining fracture, and may be

reduced to a brown powder; it is partly soluble in water forming a red coloured mucilaginous liquid, leaving behind a quantity of brownish-green matter. Small fragments held up between the eye and the light have a reddish tinge similar to the glass of hock bottles. Other samples are coal black and quite insoluble in water.

Mohideen Sheriff, Khan Bahadur, a distinguished Muhammadan practitioner in Madras, discusses very fully in his "Materia Medica of Madras," the appearance, preparation and therapeutic uses of this extract. He describes two varieties met with in that city—a hard and a soft variety. The hard kind is black and brittle, like the substance described above; the soft kind is reddish or deep brown in colour, and even after being kept for a long time, it is sufficiently tough and plastic to be made into boluses. He considers all the hard varieties to be impure or not at all made from the pods of an *Acacia*. An extract made by himself from fresh pods had a soft consistence, an astringent taste, and a slight, peculiar odour.

I would not attempt to enumerate in this paper all the medicinal virtues ascribed to this drug. It has been used in the East, especially among the Muhammadan community, as a panacea. It is supposed to be cold and dry, astringent, styptic and tonic, and is used internally and externally in relaxed conditions of the mucous membranes. It is recommended for nervous debility, dysentery, diarrhœa of children, and as a collyrium in purulent conjunctivitis. Applied as a lotion to the face it is said to improve the complexion, and to grey hair to give a black colour. Made into an ointment with beeswax, or mixed with white of egg, it has been used for burns, scalds, inflammation and crsipelas; and in a powdered state it arrests hæmorrhage.

Further details of the effects said to result from the administration of this medicine will be found in Mr. DaCosta's translation of the chapter from the *Makhzan*, or in Dr. Mohideen Sheriff's work.

It will be well to turn our attention to the source of this wonderful medicament and endeavour to trace the origin of the useful therapeutic properties attributed to it.

Babūl pods are used in India chiefly in two connections. Firstly, they are astringent, and are employed for tanning leather and making ink; and secondly, they are employed by native agriculturists for feeding and fattening cattle. No poisonous action has been recorded concerning the pods, and no active alkaloid has been detected in them. The tannic acid peculiar to the *babūl* is one of the pyrogallol series, which affords a blue-black colour with persalts of iron.

Babūl or *bablah* pods have been analysed on various occasions by chemists, with the object, in most cases, to determine the amount of

tannic acid present. V. Wilbuszewicz, in 1886, estimating the acid by means of potassium permanganate, found 12·12 per cent., and by treatment with sulphuric acid, phlobaphene, ellagic and gallic acids were obtained as decomposition products.

Kay and Baston, by employing Procter's modification of Löwenthal's process for the estimation of tannin, found 22·44 per cent. in the pods. (Allen, *Commercial Organic Analysis*).

Marfat states that Bablah pods contain from 25 to 30 per cent. of tannin, analogous to that of nut-galls, besides a free acid and a large quantity of calcium salts.

During a chemical examination made in 1898, of a sample of *babūl* pods collected in Bengal, I obtained 20·65 per cent., as the average of two concordant estimations. The complete analysis was as follows:—

Water	...	...	...	6·87
Tannic acid	...	...	...	20·65
Non-tanning soluble matters			...	15·15
Fibre	...	...	...	51·40
Ash ...	...	...	...	5·93
				<hr/>
				100·00

A solid extract was afterwards made by exhausting the crushed pods with warm water at 60° C., and evaporating the reddish-brown liquid in a porcelain basin until it was dry. This extract, which should represent the Persian and Arabian drug, Akakia, was a dark brown, solid mass, almost entirely soluble in water, and possessing a strongly astringent taste. Its chief constituents were found to be—

Water	...	...	...	5·58
Tannic acid	...	...	...	59·80
Non-tanning soluble matters...			...	16·00
Insoluble substance		...	...	8·17
Ash	...	...	...	10·45
				<hr/>
				100·00.

This, it will be noticed, is a highly astringent preparation, and resembles in its composition one of the forms of catechu manufactured for tanners from the wood of *Acacia Catechu*.

It was thought probable that the fruit of the *babūl* tree might contain an allied principle to that contained in the *Acacia concinna*, or soap-bean of South India, but no appreciable amount of a saponin-like body could be detected in the Bengal pods.

With a knowledge of what an extract of *babūl* pods should be, the light of chemical inquiry was next directed towards the composition of trade samples of Akakia. Three specimens are exhibited in the Indian Museum, two of which are in the form of round black cakes, and one in a hard yellowish, resin-like mass.

One of the black cakes, obtained from the Panjab, merely softened in hot water, without dissolving. On igniting a small quantity on platinum foil, it burnt with a dense smoky flame, and left a residue of 58 per cent. of mineral matter. It had all the characters of pitch or asphalt. Another sample of the same shape and colour, but obtained from Bengal, was similar in appearance to that from the Panjab. It consisted of a pitch-like, resinous material, and yielded when ignited about 45 per cent. of siliceous ash. The third specimen labelled "from Hyderabad," was a vitreous substance of a yellowish-brown colour. It was composed of gum, resin, vegetable debris and sand. It afforded no reactions for tannin, and, like the previous samples, was altogether foreign to the products of species of *Acacia*.

Since these samples were examined a further attempt has been made to procure in Calcutta a genuine specimen of this extract, but from the diversely coloured and resinous articles supplied under this name it is evident that entirely different substances are regularly being sold by the bazar druggists in place of the once renowned Akakia.

The local specimens, of which there are three in number, are coloured respectively black, green and light brown. The black cake bears a resemblance to those previously described, but closer examination showed that the resinous principle consisted of shellac, while the other constituents were charcoal, and a liberal allowance of sandy mineral matter amounting to two-thirds of the weight of the whole.

The light brown specimen is a pure resin, and is no doubt allied to Olibanum, many varieties of which are obtained from species of *Boswellia*. The green lump is probably the same compound mixed with colouring matter. Olibanum seems also to be the basis of the resinous ingredient present in the Bengal variety.

The result of this inquiry shows a state of affairs which deserves explanation. Either the native apothecary is entirely ignorant of the nature of some of the drugs he dispenses, or he is recklessly or fraudulently practicing a system of substitution. The condition of the trade in the time-honoured drug Akakia is far from satisfactory, and it is only by practical investigations in this direction that we can hope to remedy it.

